APPENDIX I

WETLAND MITIGATION FEASIBILITY STUDY

ROCHESTER GAS & ELECTRIC CORPORATION
ROCHESTER AREA RELIABILITY PROJECT
CASE 11-T-0534

RG&E RARP Station 255
Wetland Mitigation Feasibility Analysis and Design

Prepared for:
Rochester Gas and Electric Corporation

August 2015

Prepared by:

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Memorandum

To	RG&E/Carol Howland/Sean Murphy	Pages	2
CC	URS/William Trembath		
Subject	RARP Alternative Site 20 Wetland Mitigation Feasibility Analysis and Design		
From	Christian Lynn		
Date	August 5, 2015		

This memorandum summarizes the feasibility analysis and conceptual wetland mitigation design for the RARP Alternative Site 20 parcel (the Site). The conceptual mitigation plan is independent of which design would be selected. This conceptual design is intended to maximize the acreage of wetland creation, regardless of development impacts.

Project Site Feasibility Analysis

The Site is located along the eastern bank of the Genesee River in Monroe County, New York. The unnamed stream surrounded by wetland areas divides the site and flows from south to northeast. The proposed 102 acre site, which encompasses more than just the 95 acre Jayne's Riverview Parcel G, is primarily wooded, with two large agricultural fields located on the both sides of the unnamed stream. Approximately 23 acres of existing wetlands and an existing stream were delineated by URS's field survey. Approximately half of the wetlands on site are considered forested while the other half are within a scrub shrub environment. The forested areas on the site are comprised of mature old growth hardwood deciduous tree species. The site slopes significantly from east to west with greater than one hundred feet of elevation change across the property. The site reaches the lowest elevation along the eastern bank of the Genesee River. In some areas along the Genesee River the FEMA 100 Year Flood Zone extends more than three hundred feet into the site. The majority of
the site has slopes in excess of five percent and approximately one quarter of the site has slopes exceeding ten percent. The less sloped areas of the site correlate with the existing wetlands which are concentrated along the site's bisecting stream corridor. The soil survey for the site exhibits poorly drained over the majority of the site with the exception of several small well-draining pockets (See Attachment A).

Feasibility Conceptual Design Summary

The conceptual design for the wetland mitigation concept is based on the expansion of the existing wetlands that lie primarily along the existing stream corridor. Due to the relatively small amount of drainage area and volume of water entering the channel and site, there is a limited amount of new wetlands that can be supported. In order to effectively develop new wetlands, a shelf will be graded along both sides of the stream to create an expanded floodplain. The proposed wetlands will primarily rely on inundation resulting from the overbank

flows from the existing stream. The proposed wetlands will be developed in areas that have less severe slopes and will require less excavation. Additionally, the areas where the new wetlands are proposed reflect the portions of the site with poorly infiltrating soil types. The conceptual design also looks to minimize the clearing necessary to create the wetlands. Even with looking to avoid significant clearing efforts, in order to achieve hydraulic connectivity to the existing wetlands and stream, some tree removal will be necessary. Because of the topography that exists on both sides of the stream, a significant amount of grading will be required to reestablish the grades required to support new wetlands. In total, 13.4 acres of created wetlands are shown in the feasibility conceptual plan (See Attachment B).

Feasibility Conceptual Cost Estimate

Based on the conceptual design, it is estimated the construction cost for the wetland mitigation would be in excess of $3,500,000.00. The largest driver for cost is the excavation and hauling activity that will be required to construction the wetland areas. Based on preliminary earthwork calculations, nearly one hundred thousand acres of earth would be required to be relocated off site. A detailed conceptual estimate has been included in Attachment C.

Attachments:

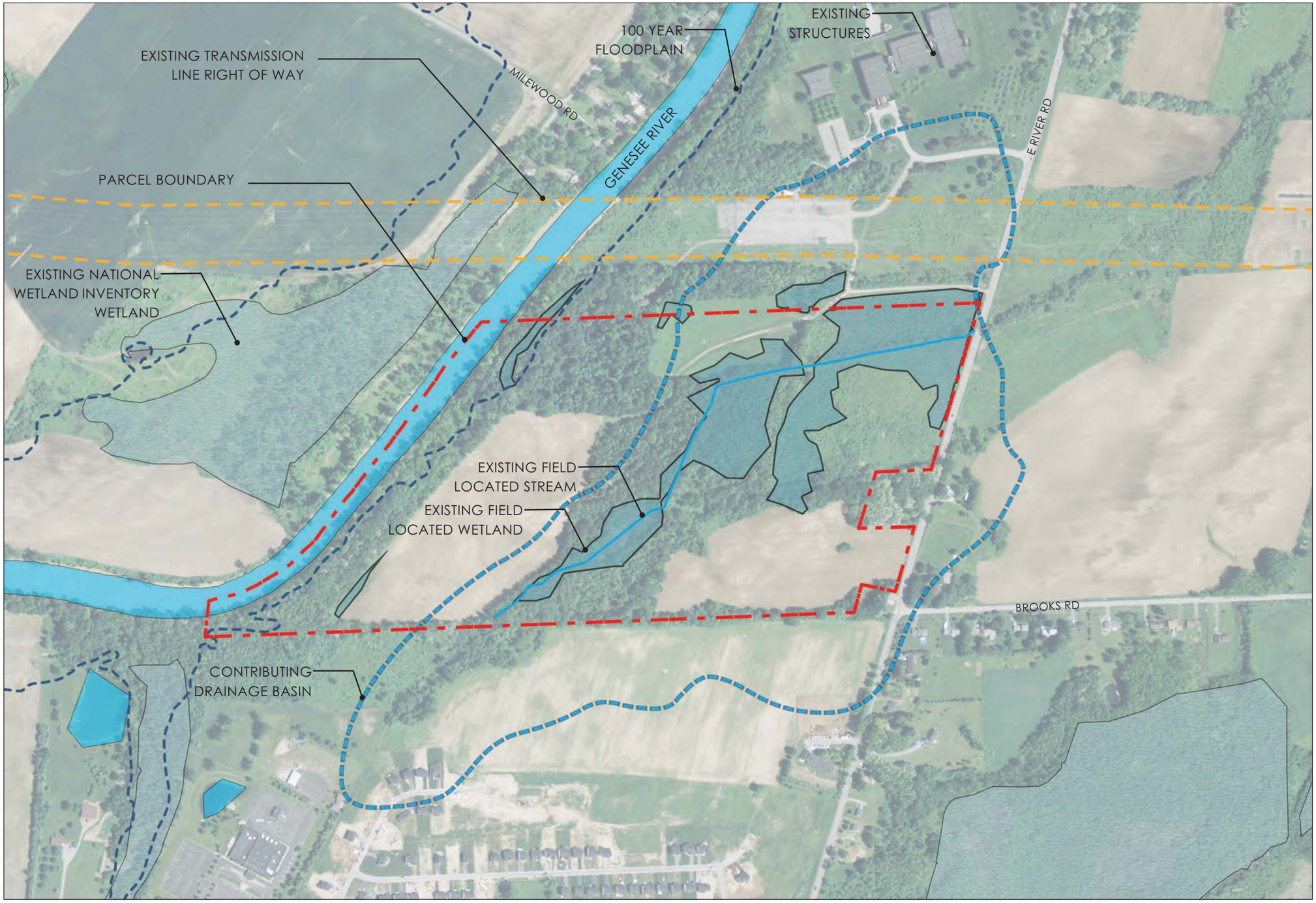
Attachment A – RARP Alternative Site 20 Wetland Mitigation Feasibility Analysis
- Note Wetland W-6 was combined with wetland W-5 to create a larger complex now named W-5, this accounts for the non-continuous wetland numbering Attachment A.

Attachment B - RARP Alternative Site 20 Wetland Mitigation Feasibility Design
Attachment C - RARP Alternative Site 20 Wetland Mitigation Feasibility Cost Estimate

LEGEND

- EXISTING FIELD LOCATED WETLAND
- EXISTING WETLAND IN NATIONAL WETLAND INVENTORY
- GENESEE RIVER
- PROJECT BOUNDARY
- APPROXIMATE EXISTING TRANSMISSION LINE R.O.W.
- CONTRIBUTING DRAINAGE BASIN
- 100 YEAR FLOODPLAIN

TOTAL SITE ACREAGE = 101.8 acres
Approximate contributing drainage = 130 acres



Meadow

Forested Wetland

Farm Field

Wooded Riparian Bank

Mature Large Tree Specimen

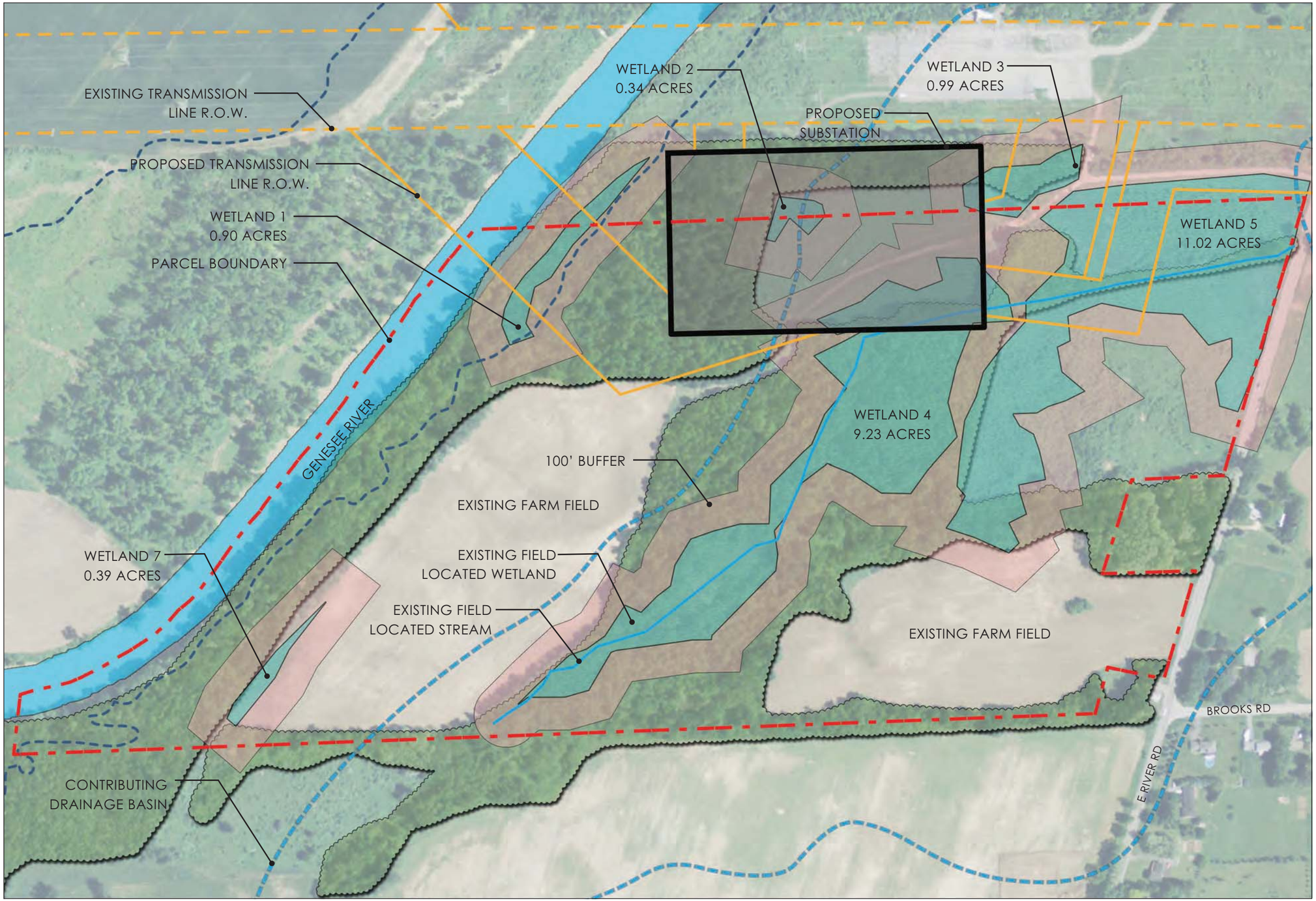
Forested Wetland

LEGEND

- EXISTING FORESTED AREAS
- EXISTING WETLAND
- EXISTING WETLAND NYDEC 100' BUFFER
- PROPOSED SUBSTATION
- PROJECT BOUNDARY
- APPROXIMATE EXISTING TRANSMISSION LINE R.O.W.
- PROPOSED TRANSMISSION LINE R.O.W.
- CONTRIBUTING DRAINAGE BASIN
- 100 YEAR FLOODPLAIN

TOTAL SITE ACREAGE = 101.8 acres
Approximate existing wetland = 22.9 acres

Wetland 1 = 0.90 acres
Wetland 2 = 0.34 acres
Wetland 3 = 0.99 acres
Wetland 4 = 9.23 acres
Wetland 5 = 11.02 acres
Wetland 7 = 0.39 acres

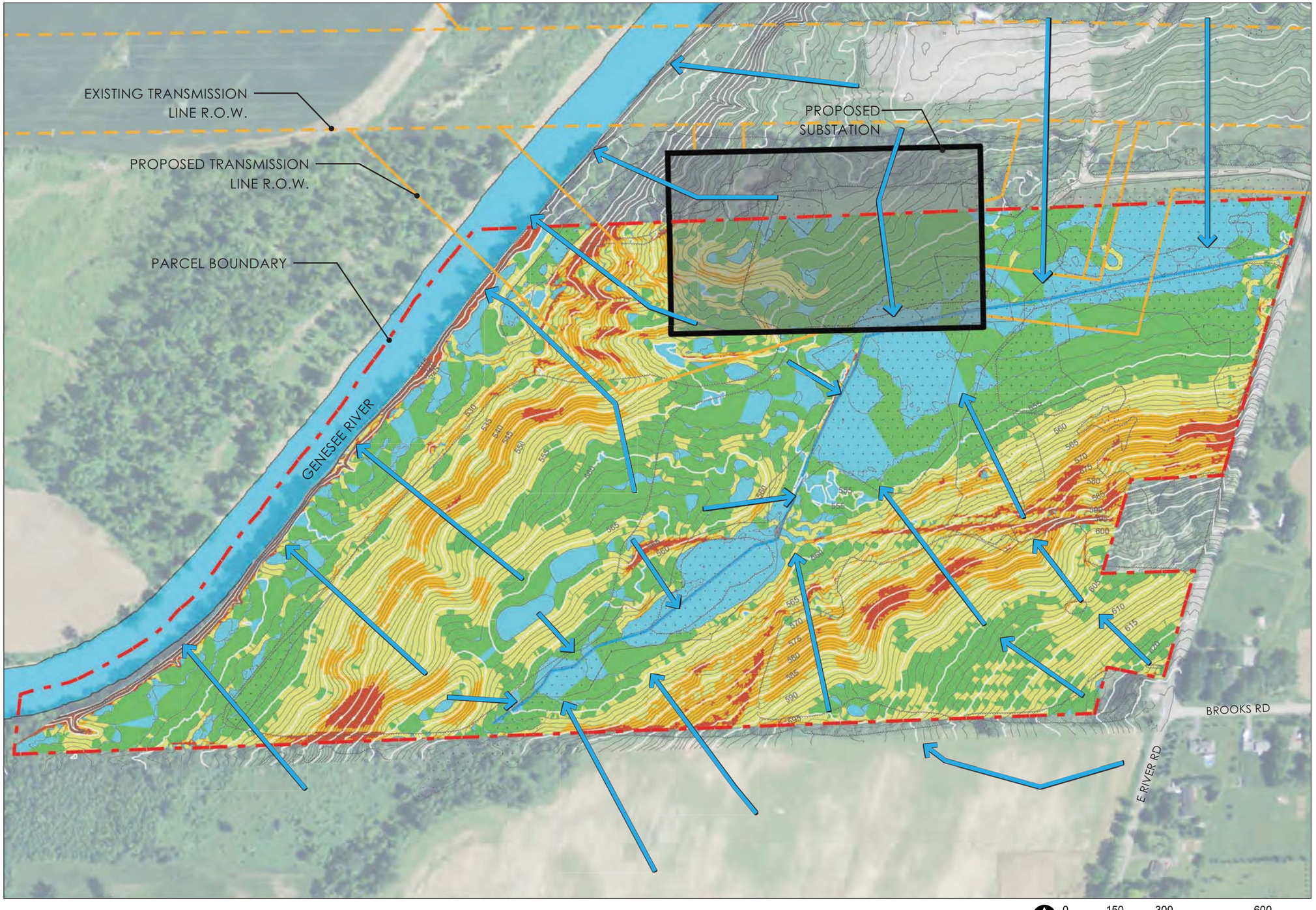


LEGEND

- PROPOSED SUBSTATION
- PROJECT BOUNDARY
- APPROXIMATE EXISTING TRANSMISSION LINE R.O.W.
- PROPOSED TRANSMISSION LINE R.O.W.
- EXISTING CONTOUR
- SURFACE FLOW

SLOPE ANALYSIS

- 0.0 % - 1.0 % SLOPE
- 1.0 % - 5.0 % SLOPE
- 5.0 % - 10.0 % SLOPE
- 10.0 % - 15.0 % SLOPE
- 15.0 % - 100 % SLOPE



LEGEND

PROPOSED SUBSTATION

PROJECT BOUNDARY

APPROXIMATE EXISTING TRANSMISSION LINE R.O.W.

PROPOSED TRANSMISSION LINE R.O.W.

SOIL RATING

A: Soils having a high infiltration rate (low runoff potential) when thoroughly wet

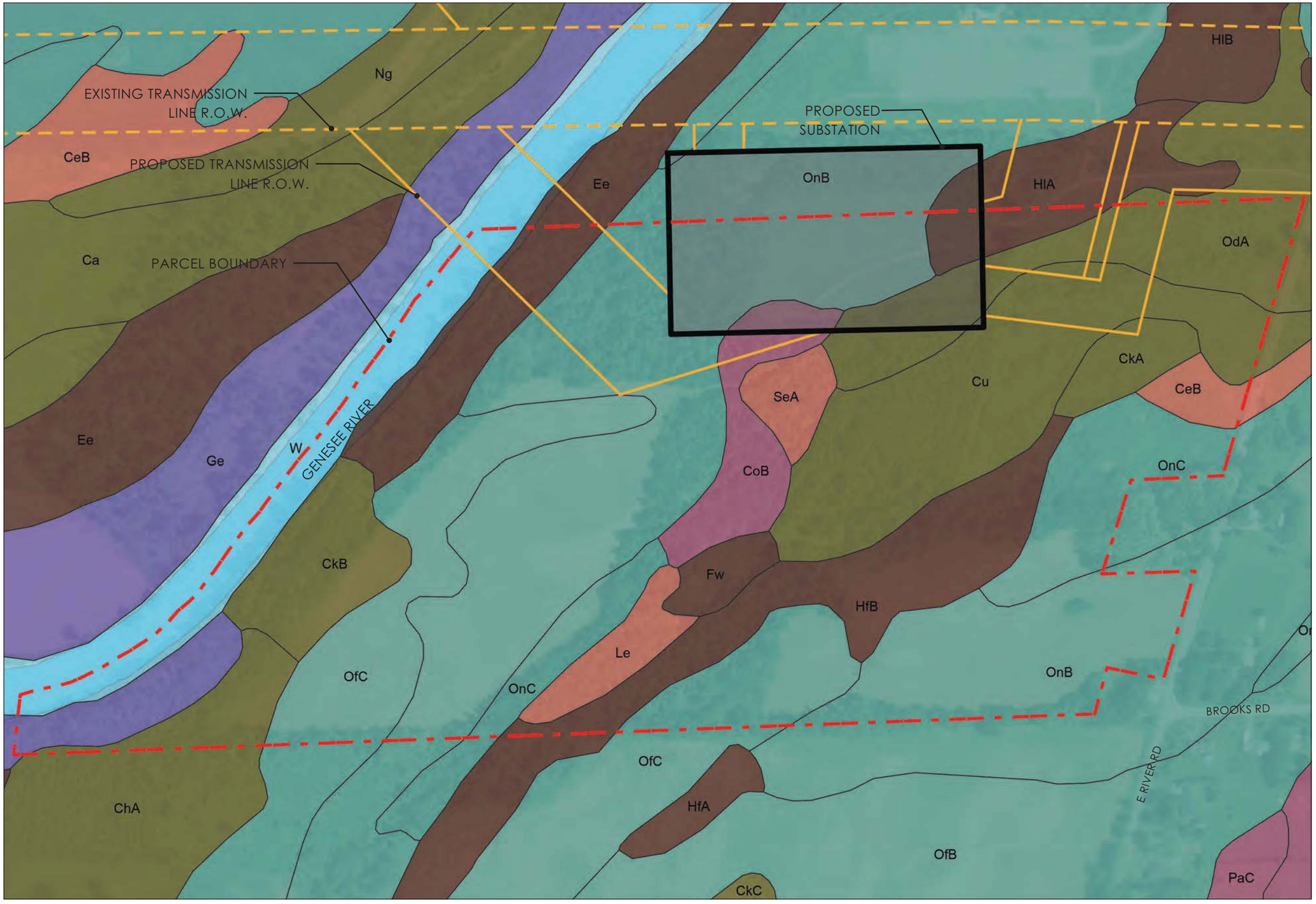
B: Soils having a moderate infiltration rate when thoroughly wet

B/D: Dual hydrological group

C: Soils having a slow infiltration rate when thoroughly wet

C/D: Dual hydrological group

D: Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet



LEGEND

- EXISTING FORESTED AREAS
- EXISTING WETLAND
- PROPOSED WETLAND
- PROPOSED WETLAND POOLS
- PROJECT BOUNDARY
- APPROXIMATE EXISTING TRANSMISSION LINE R.O.W.
- PROPOSED TRANSMISSION LINE R.O.W.
- PROPOSED JURISDICTIONAL 100' WETLAND BOUNDARY
- PROPOSED 2 YR FLOOD
- PROPOSED 100 YR FLOOD

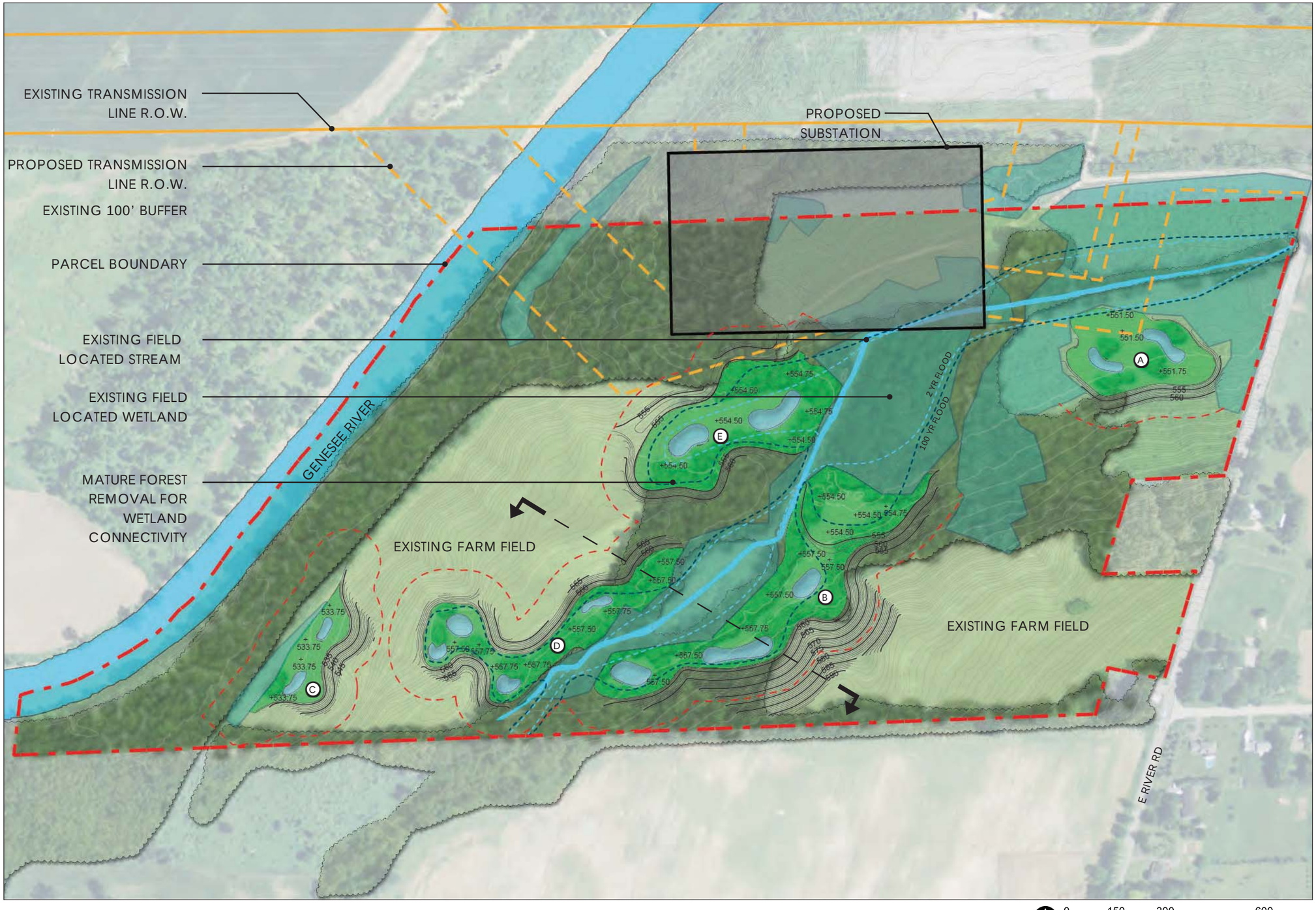
TOTAL SITE ACREAGE = 101.8 acres

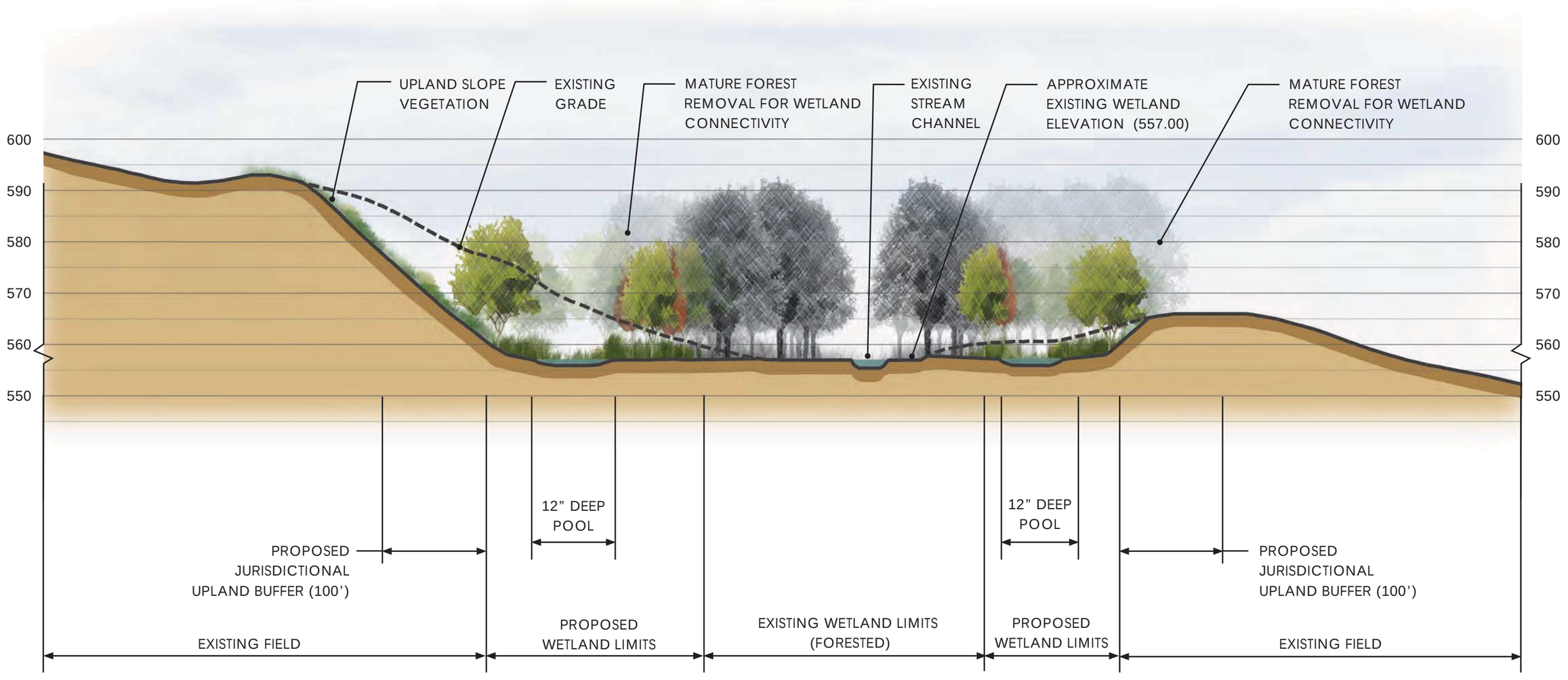
Approximate Existing Wetland = 22.9 acres

Total Proposed Wetland Acreage = 13.4 acres
- Wetland A= 2.1 acres
- Wetland B = 4.5 acres
- Wetland C= 1.0 acres
- Wetland D = 2.4 acres
- Wetland E = 3.4 acres

DESIGN RATIONALE SUMMARY
- Maximizing wetland creation
- Avoiding steep slopes
- Minimizing excavation
- Utilizing low lying areas
- Utilizing existing flow patterns
- Expansion of existing wetlands
- Constructability

The conceptual plan will require the following large-scale construction related activities:
- Vegetative Restoration: 13.4 AC
- Tree Clearing: 10 AC
- Earthwork and Hauling: 113,603 CY





HORIZONTAL SCALE ONLY

0 50 100 200 Feet

Attachment C

RARP Alternative Site 20 Wetland Mitigation Feasibility Cost Estimate

	Wetland Mitigation Construction Items	Quan	Unit	Unit Cost	Total Cost
General Conditions					
*	Mobilization and Site Maintenance	1	LS	$25,000.00	$25,000
*	As Built Survey	1	LS	$10,000.00	$10,000
*	Construction Staking	1	LS	$5,000.00	$5,000
				Subtotal	**$40,000**
Demolition					
*	Clearing Grubbing and Tree Removal	10	AC	$10,000.00	$100,000
				Subtotal	**$100,000**
Earthwork					
*	Excavation & Embankment	5,000	CY	$5.00	$25,000
*	Excavation & Haul	110,000	CY	$21.00	$2,310,000
*	Topsoil Strip (6" depth) and Stockpile	13,000	CY	$5.00	$65,000
*	Topsoil Spread (6" depth)	13,000	CY	$5.00	$65,000
				Subtotal	**$2,465,000**
Erosion Control					
*	SWPPP Requirements (Silt Fence, Sediment basisns, Temporary Grading, etc.)	1	LS	$20,000.00	$20,000
				Subtotal	**$20,000**
Landscaping - Trees & Seeding					
*	Wetland and Upland Seed Mix	16	AC	$10,000.00	$160,000
*	Deciduous Tree (2" CAL. w/ deer guard)	500	EA	$325.00	$162,500
				Subtotal	**$322,500**
				Subtotal	$2,947,500
				Contingency 20%	$589,500
Estimated Cost of Construction					**$3,537,000**